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DATAMATION

FOR MANAGERS OF INFORMATION TECHNOLOGY WORLDWIDE

DECEMBER 1, 1990

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DECEMBER 1, 1990

DATAMATION

FOR MANAGERS OF INFORMATION TECHNOLOGY WORLDWIDE

VOLUME 36
NUMBER 23

The 486 PC is only one part of an entire new line of Intel-based products, called the System 3000.

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NCR's 486 Strategy 34

BY JEFF MOAD Seven months after announcing one of the most powerful PCs ever, NCR is gambling its entire future on Intel-based multiprocessor systems. The company's vision of scalable systems is real. But all of the software isn't.

Cover photography by Kenneth Hayden/Black Star

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StarGROUP ties it all together, says AT&T's product manager, Mike Sloan.

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BY HOWARD FOSDICK Not quite ready for IBM's AD/Cycle? Not even sure what the Repository is? Follow these 10 steps, and you'll be all set for IBM's CASE applications development system—without spending a bundle.

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BY JOHN McMULLEN The Macintosh's lingering reputation as a database Milquetoast is slowly dissolving because leading products are proving their mettle as high-end development tools.

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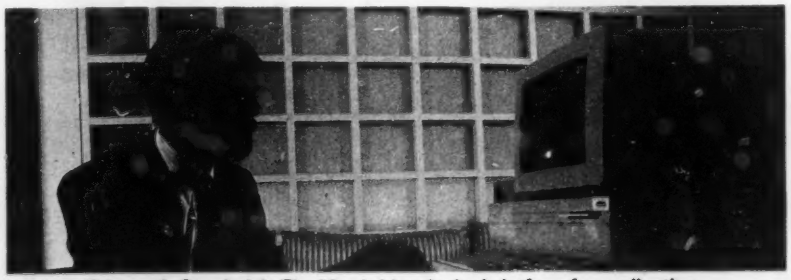

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SOFTWARE'S BIG 50

Recession? Not yet for software; sales are booming. As IS managers look to cut costs and boost efficiency, they're turning in droves to software vendors with solutions for sale.

BY LEILA DAVIS

Revenues earned in 1989 by the nation's top 50 independent software vendors soared by 46% over the previous year, according to the first annual DATAMATION report on the 50 largest U.S. software companies. Driving that growth, say top executives at leading vendors, is increasing demand for faster, more cost-efficient software solutions at corporate IS shops.

To develop our first ranking of the 50 largest U.S. software companies, DATAMATION researchers surveyed the software leaders in our annual DATAMATION 100 report to obtain most recent data on each company's revenue, income and research and development (R&D) spending in calendar years 1989 and 1988.

The rate of revenue growth will remain strong this year for those companies that can continue to successfully give users what they need: straightahead solutions to their corporate information problems at lower price/performance ratios and without overly optimistic promises. Information systems managers are under pressure from their own top management to produce fast, workable solutions for enterprisewide computer networks. Since IS staff budgets are not growing and immediate solutions are in demand, customers will rely heavily on those software vendors that can deliver.

"People are tired of waiting," says Michael King, president and chief executive officer of Software AG of North America, the Reston, Va.-based seventh largest independent software company. "In the 1990s, the CIO will be pressed to deliver on business solutions. Customers are generally looking for a steady hand in software—steady and safe—not a company following every fad. Basically, people are looking for products that work."

King says the software industry must offer a "clear strategy and focus," as well as a diversity of products to encompass today's heterogeneous computing environment. "We have to move from an entrepre-

SOFTWARE'S BIG 50

Software's BIG 50

1989 Rank	Company	1989 Total Rev.	% Increase From 1988	1989 R&D Spending	% Increase From 1988	1989 R&D as a % of Rev.	Net Income	Employees
1	Computer Associates International Inc.	1,290.0	39.5%	167.8	39.5%	13.0%	133.2	7,000
2	Microsoft Corp.	973.0	35.0%	95.7	27.6%	9.8%	170.5	5,635
3	Oracle Corp.	753.8	90.9%	73.0	104.5%	9.7%	97.7	6,400
4	Lotus Development Corp.	556.0	18.7%	94.3	12.5%	17.0%	68.0	3,100
5	Dun & Bradstreet Software Services Inc.	450.0	125.0%	90.0	125.0%	20.0%	N/A	3,700
6	Novell Inc.	422.0	21.6%	42.8	74.0%	10.1%	48.5	2,300
7	Software AG*	294.9	24.5%	59.0	24.5%	20.0%	N/A	3,300
8	McDonnell Douglas Systems Integration Co.	290.0	9.8%	27.0	-6.9%	9.3%	N/A	2,000
9	WordPerfect Corp.*	281.4	57.2%	28.1	N/A	10.0%	N/A	2,219
10	Bolt, Beranek and Newman Inc.	276.8	-9.6%	28.1	N/A	10.2%	N/A	2,867
11	Ashton-Tate Corp.	265.3	-13.7%	68.7	29.9%	25.9%	-28.6	1,450
12	Panaophic Systems Inc.	232.0	26.0%	18.6	89.8%	8.0%	26.5	1,900
13	American Management Systems Inc.	225.3	5.6%	14.8	5.0%	6.6%	7.4	2,800
14	SAS Institute Inc.*	205.8	20.7%	92.3	0.0%	44.9%	N/A	2,170
15	Ask Computer Systems Inc.	190.0	13.1%	N/A	N/A	N/A	9.2	943
16	Sterling Software Inc.	184.4	10.2%	13.4	1.5%	7.3%	7.9	1,800
17	Autodesk Inc.	178.6	52.3%	21.3	35.4%	11.9%	46.4	905
18	Cincom Systems Inc.*	171.1	2.3%	N/A	N/A	N/A	N/A	1,400
19	Information Builders Inc.*	160.0	16.0%	19.2	N/A	12.0%	N/A	1,400
20	Informix Software Inc.	145.0	45.0%	N/A	N/A	N/A	6.4	1,200
21	Legent Corp.	142.8	28.9%	31.5	23.5%	22.1%	31.3	1,000
22	Information Resources Inc.	136.4	16.6%	N/A	N/A	N/A	-12.0	1,577
23	Ingres Corp.**	130.7	45.0%	N/A	N/A	N/A	6.2	1,200
24	Candle Corp.*	128.1	27.7%	38.1	12.7%	29.7%	N/A	970
25	Compuware Corp.*	123.0	23.0%	N/A	N/A	N/A	19.5	1,481
26	Adobe Systems Inc.	121.4	45.4%	13.4	86.1%	11.0%	33.7	450
27	Software Publishing Corp.	109.0	35.0%	4.5	N/A	4.1%	18.6	476
28	Borland International Inc.*	104.4	11.3%	13.8	0.7%	13.2%	9.7	589
29	Cognos Inc.	97.2	20.4%	15.3	35.4%	15.7%	-13.5	1,047
30	System Software Associates Inc.	94.9	54.3%	5.8	61.1%	6.1%	11.1	400
31	Comshare Inc.	94.6	14.3%	14.1	10.2%	14.9%	6.3	980
32	Interleaf Inc.	92.0	22.8%	14.8	52.6%	16.1%	-15.6	785
33	Goal Systems International Inc.	86.6	42.0%	9.6	39.1%	11.1%	10.5	780
34	American Software Inc.	86.3	34.2%	6.5	30.0%	7.5%	17.2	709
35	Metier Management Systems Inc.	86.3	-9.2%	9.7	24.4%	11.2%	2.2	650
36	On-Line Software International Inc.	86.0	4.9%	7.0	-16.7%	8.1%	4.2	650
37	The Santa Cruz Operation Inc.*	83.0	36.1%	12.0	50.0%	14.5%	N/A	1,200
38	BMC Software Inc.	82.0	51.9%	20.0	33.3%	24.4%	18.0	424
39	Boole & Babbage Inc.	78.9	28.5%	14.0	16.7%	17.7%	5.4	650
40	Systems Center Inc.	77.0	30.5%	11.4	37.3%	14.8%	12.0	900
41	Symantec Corp.	71.7	41.7%	9.6	37.1%	13.4%	8.4	404
42	Softlab Inc. *§	70.5	16.0%	16.1	N/A	23.0%	11.8	590
43	Micro Focus Inc.	60.5	56.7%	8.5	14.9%	14.0%	8.1	175
44	Attachmate Corp.*	56.4	88.6%	N/A	N/A	N/A	N/A	325
45	Software Engineering of America*	51.0	27.2%	N/A	N/A	N/A	N/A	200
46	KnowledgeWare Inc.	50.1	179.9%	6.9	76.9%	13.8%	8.7	555
47	Integral Systems	49.0	32.4%	12.0	33.3%	24.5%	1.0	376
48	MacNeal-Schwendler Corp.	45.0	12.8%	8.6	22.9%	19.1%	9.8	306
49	Wordstar International Inc.¶	43.2	1.0%	5.3	3.9%	12.3%	N/A	260
50	Cadre Technologies Inc.*	42.0	20.0%	N/A	N/A	N/A	N/A	330
	Total	10,125.2	31.3%					

NOTES:
Revenue, R&D and net income figures are in millions of dollars.
Aldus Corp. is excluded due to a restatement of financial data not available at press time.
* Privately held
**Ask Computer Systems proposed to purchase Ingres in mid-September.
§Based on fiscal year ending September 30, 1989. Company declined to provide calendar year data.
¶Based on fiscal year ending August 31, 1989. Company declined to provide calendar year data.

neurial to a conventional business management approach without losing our flair," he says.

Some software executives think it's time for vendors to consolidate all the trendy technologies of the 1980s—imaging, graphical interfaces, artificial intelligence, speech recognition, compact discs and more—into practical multimedia systems residing on enterprisewide networks. The single thread connecting the implementation of these new technologies, according to Robert Tasker, vice president of software research at International Data Corp. (IDC), based in Framingham, Mass., is the need for IS to process data more efficiently and at a lower cost.

The ongoing frenzy of mergers and acquisitions (M&A) in the software industry is being used by larger ISVs as a way to try to offer a complete package of products. This falls under the theory that it is easier to acquire new technology than to develop it.

Some of the leaders in M&A include top-rated Computer Associates International Inc., fifth-ranked Dun & Bradstreet Software Services Inc. and No. 21 Legent Corp. Last year, fourth-ranked Lotus Development Corp. tried to marry No. 6 Novell Inc. but was left standing at the altar.

Robert Cook, chief executive officer of Systems Center Inc. of Reston, Va., ranked No. 40, blames the "fixation of the North American financial community on quarterly earnings" for the current acquisitions climate.

"It is difficult to invest in R&D when there is so much pressure to show quarterly gains. So companies turn to acquisition," says Cook, whose firm earlier this year acquired Software Developments International Pty. Ltd., the Australian developer of the NetMaster network management system.

Spending on research and development, as a percentage of gross revenue, barely moved at all in the software industry. Nearly half of the ISVs continue to coast along at or below the standard formula for R&D spending of 10 to 12% of gross revenues, but a sizable number are above that level, according to IDC's Tasker.

Of course, some increases in R&D spending inevitably come from efforts by acquiring firms to integrate their new, disparate product lines. "A lot of R&D money is spent—not on new products but on getting acquired products to work together. That's not moving forward," says Software AG's King.

In communications, "R&D spending is still relatively high because we have a long way to go to reach maturity," says Darrell Miller, executive vice president of Provo, Utah-based Novell. "Generally as an industry matures, resources are shifted from new development to service and support. But communications is still a young, growing, maturing industry. We are still very immature as far as the tech-

SYSTEMS CENTER'S COOK: Bigger isn't necessarily better.

What would it take to outperform DASDMON?

SOFTWARE'S BIG 50

CANDLE'S CHERNICK: Merging companies may wind up supporting competing products.

nology goes."

Novell spent a healthy $42.8 million on R&D last year, an increase of 74%. But because sales were also strong last year, that only worked out to about 10% of gross revenue. Last year's aborted merger with Lotus had no effect on R&D spending plans for 1990.

Most software executives expect the pace of merger and acquisitions activity to remain strong in the industry for some time. And Tasker sees a new growth area for M&A developing. "Hardware companies realize that if they are just selling hardware, they will be out of business by 1995," says Tasker. "Those that haven't been particularly into software in the past are shopping hard for software companies right now."

The Barbell Theory

Tasker also believes the industry will eventually come to resemble a barbell shape, with a large group of very big companies at one end, a few struggling midsized companies in the middle and a large and ever-replenishing number of small start-ups at the other end. Those few remaining midsized companies will be prime targets for mergers and acquisitions.

But not all software executives agree that M&A is the most efficient way to obtain new products. The acquired technologies still must be integrated into existing product lines, often at considerable expense.

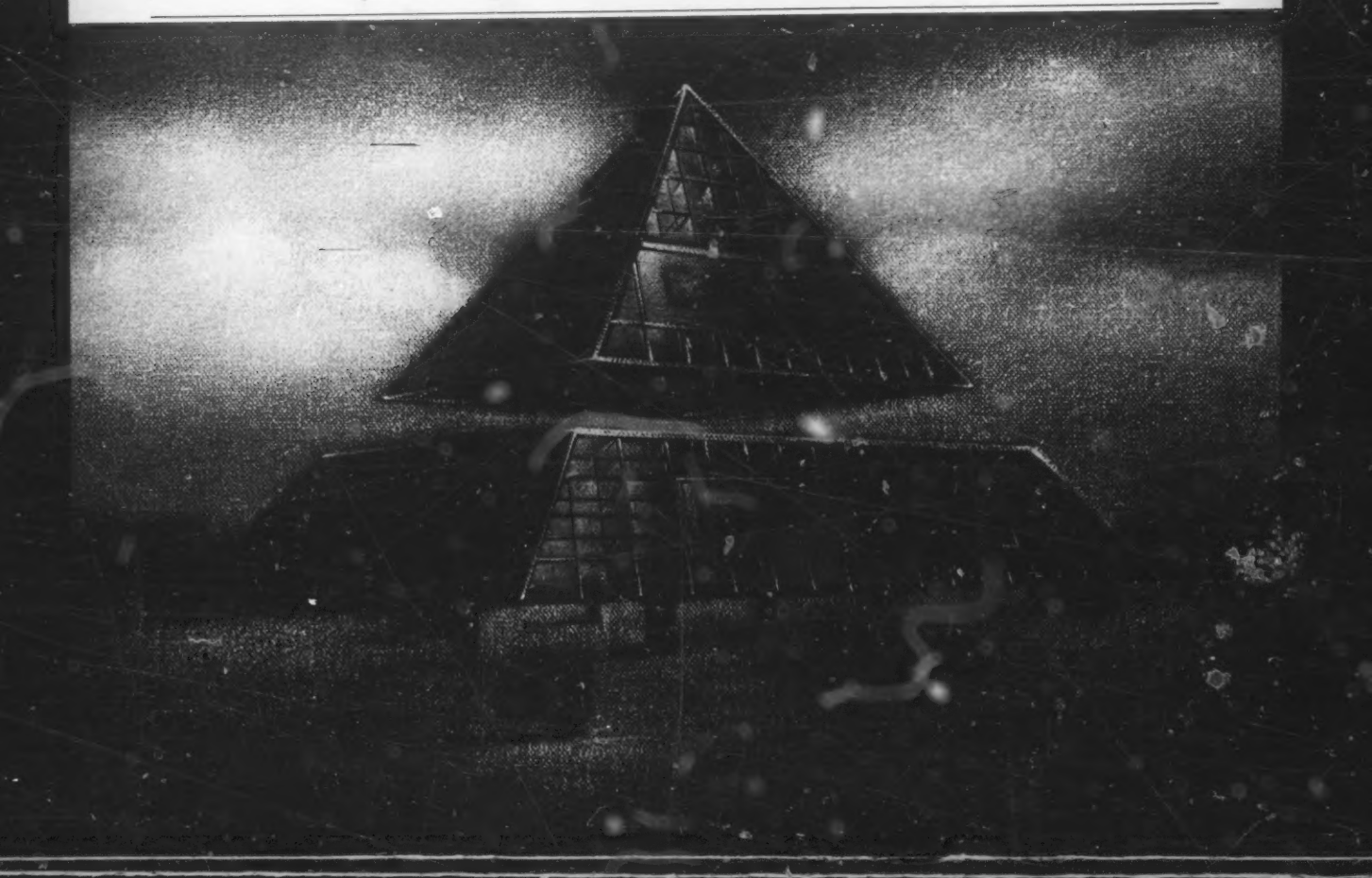
"Bigger isn't necessarily better," says Cook. "If the products fit into your company's strategic direction, it can be better to acquire. But, if not, you're just creating software junkyards."

According to Los Angeles-based Candle Corp.'s chief executive officer, Aubrey Chernick, "A company has to have either an acquisition strategy to buy innovation or an R&D strategy to develop products in house." But those companies that chose the M&A strategy may wind up supporting several competing products, he notes.

Management at Microsoft Corp., the nation's second-largest software firm, takes a similar view of the recent merger mania. "Being large is not a guarantee of success—you have to be competitive and agile. In software, the size of a company doesn't create a significantly better cost structure. The complexity of integrating and [supporting] overlapping products is why we have been relatively inactive in mergers and acquisitions," says Microsoft president Michael Hallman. "Products must work well and work well together as we move into a more graphical environment."

The Open Road

Hallman also says that technology produced and



developed through mergers and acquisitions must maintain an open architecture to meet customers' needs. "We believe in standards and openness. If a hardware company acquires a software company, that can be good as long as they are not creating a more proprietary environment."

Joseph Agro, executive vice president at Software AG, cites openness as "a condition of survival" in the software industry. "We must help customers to solve problems, and openness is the way to do that—it is an open, heterogeneous world."

"No one can supply every part of the solution. That's why openness is important," adds King of Software AG. "Client/server computing is important. Development productivity tools are important, like CASE tools, fourth-generation languages, imaging, text storage and retrieval. The trick is to get at it all."

Microsoft's Hallman sees system hardware becoming a generic configuration to which the buyer will add multimedia hardware and software to create a system specialized to his or her needs, but open to the network. "In general, client/server applications and desktop computing will be very hot, with rich graphical interfaces to improve ease of use," he says. "We will finally get technology to adapt to the way people work, rather than people adapting to the way technology works."

Hallman expects to see continued development of voice and handwriting interfaces "that will be immensely appealing to the user and have enormous potential. Voice should be just another piece of data," he says.

With all these new additions to the network, communications software vendors Novell and Systems Center see network management, including artificial intelligence capabilities, as a crucial area of software development for the coming decade.

"In terms of technology, we [in networking] are still working on the basic block and tackle. But everything is synergistic—the new RISC [reduced instruction set computing] processors speed the ability for more sophisticated applications with high-resolution graphics, which speeds the need to move more data, so we have to have faster network pipes," says Novell's Miller.

According to Cook at Systems Center, "the biggest trend driving the software market is network management and the need for connectivity between diverse hardware platforms. There is a lot of T1, T3, voice/data integration, LAN growth, etc. Someone has to tie them all together for the customer.

"And what is driving the customer—the IS manger," says Cook, "is the mass of information that he can't get his arms around. Software will be the way to achieve that goal."

MICROSOFT'S HALLMAN: We believe in standards and openness.

SOFTWARE AG'S KING: People are looking for products that work.

ASTEX from

Making Pan-European Retailing Work

European retailers are gearing up for 1993's cross-border trading by sharing new technology designed to improve distribution and cut costs. Customers are reaping the benefits. But some retailers are battling critical problems.

BY STEVEN SONSINO

IMPACT '93

No one would have believed, in the last months of the 1980s, that the integration of the East and West German currencies would effectively be complete less than a year after the Berlin Wall was first breached. The integration of the two economies makes it clear that, although problematic, it will be possible for retailers to trade across Europe when the European Community's internal barriers to trade are removed at the end of 1992. Those with foresight are planning new strategies now to take advantage of the changes coming in 1993. Retailers are looking to fine-tune distribution, ordering and cost cutting, and so they are looking to the latest technology, from bar-code scanners to systems for electronic data interchange (EDI).

Implementing continental retail operations will not be easy. The willingness of retail management to introduce and manage information technology will be critical to success in the 1990s. One plan is the formation of cross-border consortia aimed at cost cutting through economies of scale. Perhaps the most significant of these groups is the recently formed European Retail Alliance, comprising Argyll, which operates the British Safeway stores, the Dutch Ahold group of companies and the French corporation, Casino.

Interest in the alliance's aims has spread so much that it now forms the core of Associated Marketing Services—a group of nine supermarkets that also includes Dansk Supermarked, Sweden's ICA, Finland's Kesko, Italy's La Rinascente and Spain's Mercadona. The thread that holds these diverse retailers together is a heavy reliance on store-brand goods. The group plans to share significant techniques such as EDI and direct product profitability (DPP).

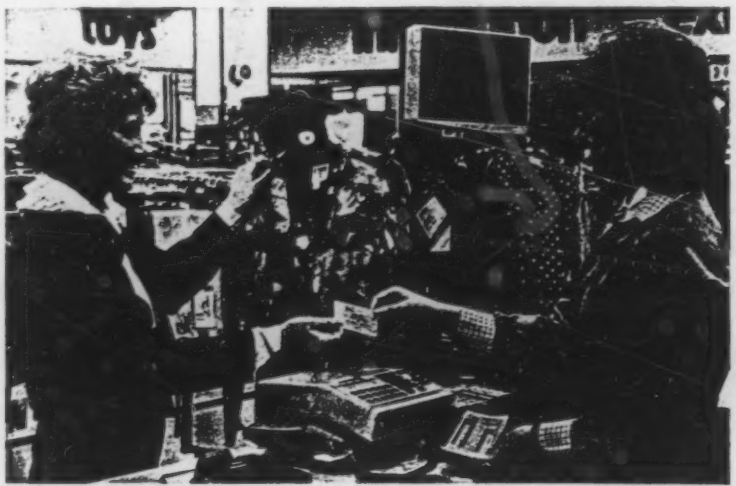
Calculating the DPP is a complex process that involves determining the gross profit margin of a product and then adjusting that margin to allow for discounts. Subtracting the cost of storage and distribution yields a reasonable guide to how much profit each of a supermarket's thousands of product lines generates. The DPP is valuable for measuring how each product fares.

In Europe, Ahold and Casino are the chief proponents of employing the DPP to calculate profit margins. Through these companies, national trade associations such as the Institute Francais du Merchandising (IFM) and the Institut fur Selbstbedienung have developed industrywide models for the DPP. Based on the IFM model, Casino developed its own PC software to calculate DPP. The system has proven so successful that Casino plans to upgrade it to run on IBM mainframes.

Retailers Sold On EDI

Perhaps the technology with the greatest potential for European retailers is EDI, the latest form of paperless trading, says Philip Coathup, director of EDI business development with Britain's Istel, now part of AT&T.

One of the most advanced EDI systems in Europe is Tradanet, which is based on



EUROPEAN CONSUMERS carry debit cards these days, as retailers implement electronic funds transfer at point of sale. (EFTPOS)

Retailers Buy Into Scanning Equipment

The number of stores that use European Article Numbering scanning equipment is growing rapidly.

	1981	1983	1985	1988	1989
Austria	0	9	56	304	1,665
Belgium	0	12	115	356	863
Denmark	0	0	14	416	1,061
Finland	0	3	9	325	1,310
France	2	37	420	2,300	4,648
West Germany	23	69	290	1,544	3,434
Greece	0	0	0	0	0
Ireland	N/A	N/A	N/A	14	14
Italy	9	13	20	618	3,600
Luxembourg	N/A	N/A	N/A	18	18
The Netherlands	1	36	134	580	800
Norway	1	1	33	742	1,136
Portugal	0	0	0	81	220
Spain	0	2	36	422	1,603
Sweden	N/A	N/A	131	710	1,725
Switzerland	N/A	N/A	N/A	91	575
United Kingdom	7	42	160	1,152	3,999

Source: European Article Numbering Association

the U.K. Tradacom standards put forth by the European Article Numbering Association (EAN). Standardized article numbering, or symbol marking, has been key to the success of bar-code scanning in Europe. This U.K.-based association and its 35 affiliate organizations across the world have encouraged the acceptance of a standard set of codes for product marking. Most food suppliers, along with many in the nonfood sectors, such as do-it-yourself home improvement chains, have adopted the EAN's symbol-marking system.

Another advanced EDI system is the Dutch Transnet system, which is based closely on U.K. standards. In Germany, the SEDAS system is well on its way to acceptance as the main EDI medium; it also forms the core of the Austrian Ecodex network. Other European systems in evidence include the Belgian ICOM network and the Groupe Bull SA system, Allegro, devised with France's article numbering association, Gencod.

The EAN is particularly concerned with developing standard EDI links across the continent. Thus far, more than $6.5 million has been devoted to this task through the trade and electronic data interchange system, TEDIS.

Employing EDI Now

Devising cross-border systems is all very well, but many users want access to the savings and benefits of EDI now, not

☐ THE MAIN PROBLEM IS GETTING BUSINESSES TO TALK TO EACH OTHER.

in 1993. These users should devise a traditional business strategy before embarking on a course that involves EDI. "Users should decide whether they want to use EDI to save time or money," says Istel's Coathup. "Then they should make sure their computer systems are up to it and should find someone who's already doing it."

One firm employing EDI now is Texas Homecare, one of Britain's largest do-it-yourself chains. Based in Wellingborough, in Northamptonshire, Texas Homecare uses EDI strategies and technology to help operate more than 280 stores across Britain. EDI streamlines the handling of the 100,000 or more invoices the company receives every week.

Andrew Coote, former merchandising manager for Texas Homecare, suggests that the interesting side of EDI is the way it can be molded to become the core of an entire IS strategy. Texas Homecare decided that straight EDI—between supplier and retailer—was not enough, and has added extra functions to its EDI links, such as sales analysis and forecasting. In order to do this, the firm relies on IBM equipment. Other members of the do-it-yourself community have criticized the company's plans, largely complaining about the firm's choice of IBM's Business Network Service (BNS) as a carrier, rather than INS's Tradanet, which is used by most other suppliers. This choice of systems can cause problems for vendors that supply retailers using the different networks. Whereas Tradanet is machine independent, BNS is only accessible through IBM equipment, requiring Texas Homecare suppliers, for instance, to use IBM gear in addition to their already installed computer systems.

In Texas Homecare's defense, Coote explains that "the problem is that Tradanet was not going to go beyond the batch EDI approach." BNS, however, can support the extra functions that Texas Homecare wanted and support links with international suppliers. The company's systems director, Andrew Kinnell, says: "From a startup of about 18 months ago, we've got some 180 suppliers signed up. We have to try to explain that we are not selling an alternative to Tradanet. Rather, we are giving a plus service."

The heart of Texas Homecare's EDI system is a package from U.S. software house PR Johnson, running on an IBM 3090 mainframe at the company's Wellingborough office. On top of the main system, Kinnell is investigating additional statistics packages to help the company analyze current sales and even predict future demand. One package the company is looking at closely is IBM's Inform, which simply tags onto the merchandising system.

Impatient Wait For Standards

One of the most significant problems facing European retailers wanting to implement integrated distribution strategies, especially across country lines, is the lack of technology standards.

Keith Marshall, principal of Her Majesty's Customs Directorate Division D7, is responsible for the technology used by Her Majesty's Customs and Excise in Britain. "Europe is waiting for us to set [standards]," he says. At the very basic level, there are communications protocols to consider: IBM's Network Job Entry is popular, allowing multiple hosts to share job queues and system spools, while terminals using X3780 protocols are more common than many appreciate, says Marshall.

Customs and Excise has undertaken a number of projects to ease the introduction of paperless trading, before 1993 if possible. In August 1989 the department introduced the Fast Lane Clearance System to move goods through customs on the basis of electronic declarations. Until recently, Customs and Excise required 35 forms for goods crossing international borders. The directorate has now shrunk this requirement to only one form, and even this will disappear in 1992, freeing import/export computer systems for more important functions.

Also in the wings is the Customs Handling of Import and Freight system, or Chief, which should replace all the functions of Customs and Excise's on-line inquiry system, called DEPS, a mainframe-

based system that supports multiple terminals. Chief will enable the department to share data between all U.K. ports and airports via value-added networks. DEPS already handles a great deal of the import and export data, but there is much data duplication in the DEPS database.

What all this development will achieve for retailers is an improvement in the volume and quality of the data available to them.

Fruits Of Automation

One of the most advanced retailers of the 1990s will be one of Britain's largest supermarket operators, Sainsbury's, which began an ambitious program of information technology development 10 years ago and is now seeing the fruits of its early work. The London-based retailer was one of the first in Britain to establish a central distribution network. A

☐ SAINSBURY'S INSTALLED SCANNING CHECKOUTS IN ALMOST ALL OF ITS SUPERMARKETS.

fleet of 750 trucks now makes daily deliveries from its own or contracted warehouses. The results? Every week, more than 7 million customers purchase products from among the company's 10,000 product lines, giving it 11% of the national food and drink sales, with revenues of almost £5 billion ($9.4 billion). The company's profits are growing at 20% yearly.

Handling a central distribution system without major IT support would have been impossible, so the company installed an International Computers Ltd. (ICL) minicomputer in every store to support the daily ordering process. Orders were passed via the data communications network to a central mainframe that processed the orders.

Sainsbury's has also installed scanning checkouts in almost all of its supermarkets at a cost of £65 million ($123 million). The scanners help customers check out more quickly and remove the need for costly and time-consuming price-labeling operations, says Alan Jacobs, the company's director of data processing. The new systems have also enabled Sainsbury's to improve store ordering and get a better idea of what customers want. ▭

Steven Sonsino is a London-based writer who specializes in information systems and scientific topics.

Payment Systems Smarten Up

European wallets are getting thinner these days—not due to lack of money, but because many customers no longer need to carry cash. Debit cards are rapidly gaining acceptance and are considered a major retailing advance. Electronic funds transfer at point of sale (EFTPOS) systems improve customer service, speeding checkout lines and providing convenience.

Sainsbury's, one of Britain's largest supermarket chains, introduced EFTPOS terminals in 40 major stores in time for the 1988 Christmas peak. The systems proved popular with customers and management alike: now more than 200 stores are fitted with EFTPOS.

When customers use debit cards at EFTPOS store terminals, data from the card are transmitted to an independent host. The host checks that the card has not been stolen and then authorizes the transaction. This process is usually conducted over standard telephone lines using either an X.25 network or Cardaway, British Telecommunication Ltd.'s electronic funds transfer network.

However, despite Europe's interest in EFTPOS, development on the Continent lags behind that of the Far East. There, government, banks and retailers are putting significant resources into EFTPOS. The most successful Far-Eastern project is running in Singapore, where two influential banks form the core of a five-bank consortium that in 1986 underwrote the country's EFTPOS network, the Network for Electronic Transfers Singapore (Nets). In its first eight months, transactions worth S$25 million ($9.3 million) passed through the system.

In comparison, U.K. banks have been slow to take interest, although tests have been under way since the early 1980s. Clydesdale Bank ran the first live on-line system, Counterplus, in 1982. The most widespread system today is Barclaycard's PDQ (Process Data Quickly), formerly called Darts. There are more than 7,000 PDQ terminals now in place, and this number should double by the end of this year.

In 1985, the EFTPOS U.K. organization incorporated to establish common rules for debit card transactions in Britain. Now EFTPOS U.K. is a clearing company within Britain's Association of Payment Clearing Services. Successful trials, running 2,000 terminals, have been carried out in Edinburgh, Leeds and Southampton. The linchpin of EFTPOS U.K.'s plans is customer identification by passwords, or personal identification numbers (PINs).

However, some retailers take a dim view of this identification method. Robert Woodman, director of Burton Group PLC and chairman of the Retail Consortium's payment systems policy unit, says: "We have reservations about what EFTPOS U.K. is doing, especially with reference to its concentration on PIN verification."

Most systems do offer an alternative to identification by number, one that the British are loathe to part with: the signature. All Woodman asks is that the retailers be left with the choice. "The retailer clearly has to be able to accept a variety of payment systems, but the major form of authentication for credit cards, cheque cards, even the new Switch card [a debit card] is a signature. PIN, we believe, will be very much a minority activity."

J. SAINSBURY'S, a leading U.K-based supermarket chain, is one of the most technologically advanced retailers in the U.K.

AT&T Computer Systems thinks it has met that challenge with its StarGROUP UNIX networking products. With the introduction of its StarGROUP Server for Macintosh software, the company is one of the first major vendors to offer support for DOS, UNIX, OS/2 and Macintosh systems in one network operating system.

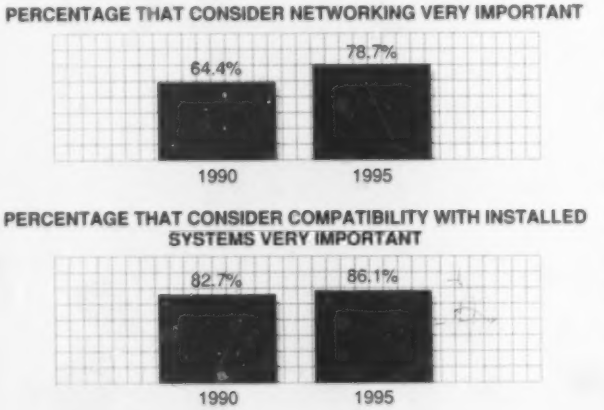
StarGROUP Server for Macintosh software is designed to operate on either AT&T's 80386 or 80486 microprocessor-based servers running the company's UNIX System V release 4.0 operating system. The Macintosh software runs under AT&T's StarGROUP LAN Manager Server, a local area network (LAN) operating system that is actually a proprietary UNIX version of Microsoft's LAN Manager. A version of the software to support eight users is priced at $795; an unlimited user license is priced at $1,295. The product, which is now in beta test, will be available in January.

With StarGROUP Server for Macintosh and an AppleTalk router, either stand-alone or networked Macintosh users can be connected to an AT&T server to share files and printers with DOS-, OS/2- and UNIX-based computers. Each Macintosh communicates with the server through AppleShare software that is shipped by Apple with each Macintosh. The Macs are tied to the server through an Ethernet network.

Users on a StarGROUP network can transparently share files and printers; files created by one user can be accessed and modified by another. For example, a data file created by a Macintosh client can be accessed and modified by an OS/2, DOS or UNIX client, and vice versa. A database application and its files can be accessed by all four client operating systems without modification, and all users retain their familiar interfaces.

IS Executives Want Network Flexibility

Network connectivity options, combined with compatibility with current hardware, are top concerns when purchasing PC equipment.



Based on a survey of more than 200 IS executives in *Fortune* 1,000 companies.

Source: Business Research Group

IN FOCUS

StarGROUP Server

AT&T Computer Systems
Morristown, N.J.
Price: $795 (8 users)
$1295 (unlimited license)
Circle No. 500

System Requirements:
- UNIX System V release 4.0 operating system
- AT&T's StarGROUP LAN Manager Server software
- An AT&T 80386 or 80486 microprocessor-based server
- An AppleTalk router

Key Benefits For IS:
- Easy setup
- Only one backup needed for all network files
- Lets users keep familiar interfaces

"The product was designed to satisfy the demands of academic, business and government Macintosh users for connection to a common server," says Mike Sloan, product manager for StarGROUP Server for Macintosh. According to Sloan, software servers for other systems, such as Novell networks, will be added to the StarGROUP product line in the future. Recently, AT&T announced a software server for IBM local area networks. The product ties PCs networked with IBM PC LAN, LAN Server and LAN Requester software to an AT&T network.

So far, AT&T's moves have garnered praise from both analysts and users. Says Tom Wood, a market analyst with the Business Research Group in Newton, Mass., a Cahners Publishing company: "By allowing Macintosh users to access data on a UNIX server just as if it were a Macintosh server, AT&T is moving in the right direction and has introduced a pretty impressive product. Although there are other LAN servers that interface with the Macintosh, such as Digital Equipment's DEC LanWORKs, the AT&T product is the only Intel-based UNIX server currently available [for the Macintosh]."

Wood says the AT&T software is especially relevant to businesses now that Apple has introduced a line of lower cost, more powerful Macs to compete with IBM in the corporate desktop market.

Bernard Hecker, assistant director of computing at Trinity College in Hartford, Conn., has been beta testing AT&T's Mac software for several months. Hecker administers three large AppleTalk networks linked to an AT&T server shared by PC and workstation users. "This is one impressive server for PCs, Macs and UNIX clients," he says. "I don't have a huge technical staff, and the server saves us time because there is only one system to back up."

Trinity runs database, word-processing and graphical applications off the server. Hecker says the AT&T system has done exactly what the school wanted it to do, with no additional software to write and very little downtime. Hecker says he will be first in line for the final version of the software. "We will start by buying the unlimited license for one server and then add more hardware depending on future traffic on the network," he says. "I've made a commitment to do Macintosh networking via AT&T's Mac server."

MARKET INSIGHTS

AN ANALYSIS OF ECONOMIC TRENDS

Indicator Points To IS Upturn

BY MADELINE FRANCHI
Cahners Economics

The DATAMATION Information Systems Performance Indicator is continuing its downward slide. The indicator fell to 100.41 in July from a revised 100.75 in June and will most likely bottom out this month at a low for the year of 99.4. But the end is in sight; we expect the indicator to slowly rise early next year, reaching a peak by the third or fourth quarter, with a total increase of 5% for all of 1991.

Hours worked in the computer industry fell by nearly 2% in the most recent month, while the number of persons employed in the sector fell by just under 1%. Changes in the number of average hours worked generally provides an early hint of the direction overall employment will take. That's because manufacturers generally increase hours worked—including overtime—during the start of an economic upturn, then add employees when growth looks persistent; conversely, employers first decrease hours worked before laying off workers during an economic slowdown.

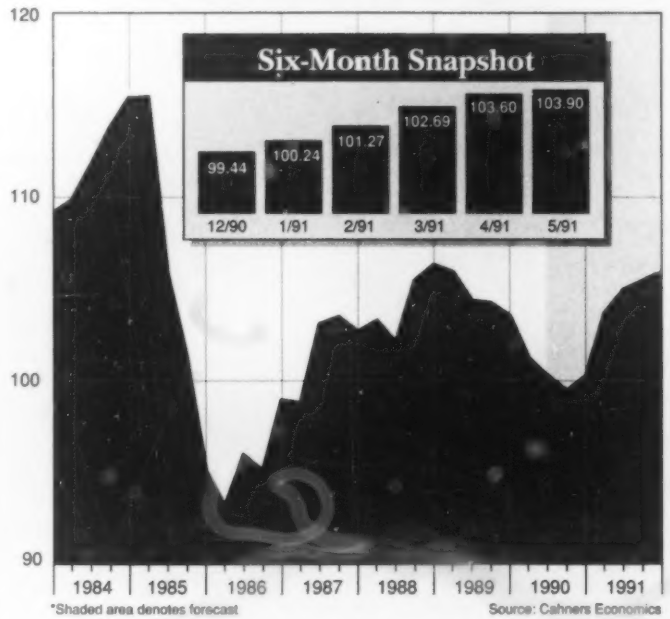
Although some other measures are still weak, signs of a coming recovery for the IS sector are becoming evident in data on new orders. In July, new orders for computers, peripherals and communications equipment totaled $10.4 billion—up 6.7% from June and up 11.5% from July 1989.

Methodology

The DATAMATION Information Systems Performance Indicator tracks the economic health of the IS industry. Cahners Economics developed this indicator, which is based on weighted moving growth rates for five statistics: (1) IS inventory, (2) new IS orders, (3) average weekly hours of computer industry employees, (4) Standard and Poor's Computer Systems Stock Price Index and (5) contracts and orders for plant and equipment. For more information on Cahners Economics's forecasting services, including seminars, newsletters and database diskettes, contact Dan Buchan at (617)-630-2105, by fax at (617)-630-2100, or write to Cahners Economics, 275 Washington Street, Newton, MA 02158.

The IS Performance Indicator

Things are finally starting to look up again for the IS industry.



*Shaded area denotes forecast

Source: Cahners Economics

	July 1990	June 1990	% Change 6/90-7/90	July 1989	% Change 1989/1990
■ Information-Processing Equipment					
Shipments (SA, $ millions)	9,644	10,022	-3.8	9,320	3.5
New Orders (SA, $ millions)	10,399	9,742	6.7	9,329	11.5
Unfilled Orders (SA, $ millions)	29,061	28,306	2.7	27,678	5.0
Inventory (SA, $ millions)	21,212	20,888	1.6	22,074	-3.9
■ Computer Production Workers					
Employment (NSA, thousands)	274.4	276.7	-0.8	293.6	-6.5
Average Weekly Hours (monthly avg.)	41.2	42.0	-1.9	41.4	-0.5
■ Stock Index					
S&P's Computer Systems Stock Price Index	193.65	196.31	-1.4	190.33	1.7
■ Contracts & Orders					
New Plant & Equipment (SA, $ billions)	43.59	39.96	9.1	45.99	-5.2

SA= seasonally adjusted;
NSA= nonseasonally adjusted

Sources: U.S. Commerce Dept. and Standard & Poor's;
Forecasts: Cahners Economics

Voice-Data Applications On The Rise

BY WARREN CHILDS
Business Research Group

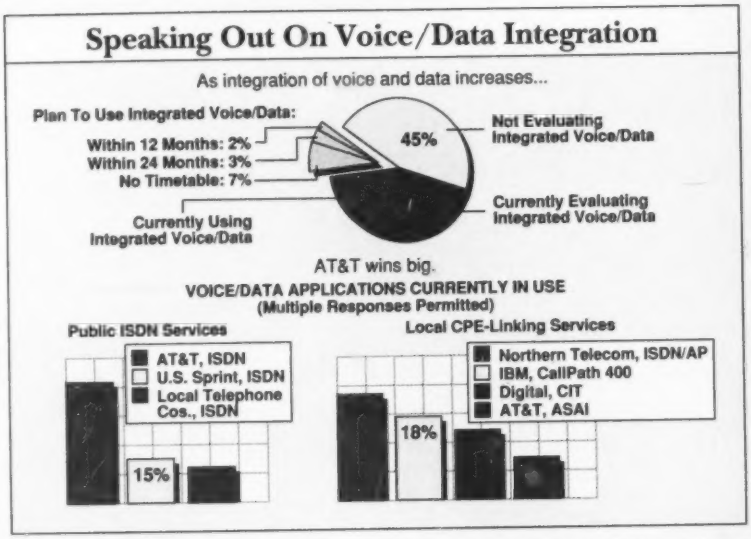
The latest survey of the DATAMATION High Technology Panel shows growing interest in integrated voice and data applications. Almost one panel member in three, 29%, has implemented some form of integrated voice-data software or is planning to do so.

Users of voice-data applications face two basic decisions when implementing this technology. First, they must decide which vendor to use for the Integrated Services Digital Network (ISDN) to connect their off-site users. Second, they must choose a particular vendor's technology for software that links the local computer equipment—the customer premises equipment (CPE)-linking software.

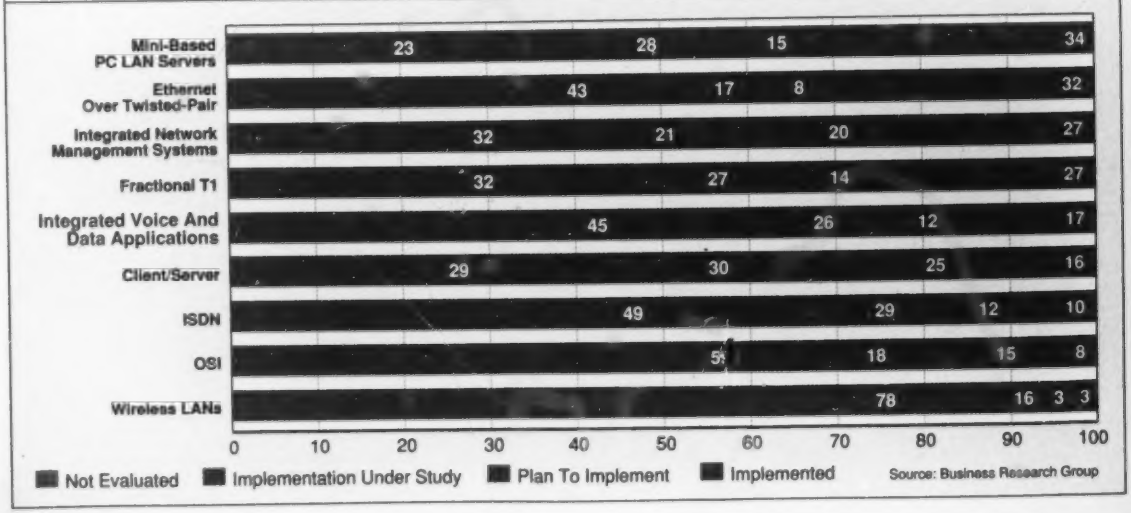
For voice and data integration applications, AT&T is by far the most popular vendor of public telephone network ISDN services, picked by 41% of the DATAMATION High Technology Panel. Another 15% picked U.S. Sprint Communications Co., and 12% say, they use local phone companies for these services.

The choices are somewhat wider when it comes to vendors of local CPE-linking software. Selected by 23% of the voice-data users on our panel, Northern Telecom Inc.'s ISDN/Applications Part (ISDN/AP) is the leader with its PBX-based ISDN capabilities. But three other products—IBM's CallPath 400, with 18%; Digital Equipment Corp.'s Computer Integrated Telephony (CIT), with 15%; and AT&T's Adjunct Switch Applications Interface (ASAI), with 9%—are also strong contenders for local voice-data support software services. ▭

Speaking Out On Voice/Data Integration



DATAMATION's Technology Implementation Index: Networks/Communications



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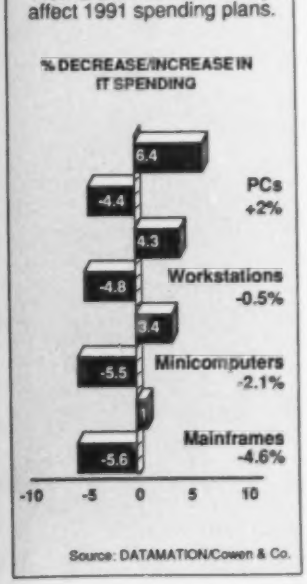
Investments in computers, networks and software are no ordinary capital outlays. That's why present products, not past economic cycles, will determine whether users will buy today or tomorrow.

Should A Recession Curb Your Computer Appetite?

History is a very poor teacher of economic lessons when the subject is whether a recession might, or should, affect spending on information technology. The data from the 1973–1975 and the 1980–1982 recessions that economists and analysts would normally sift through to predict whether users are going to cut their IT budgets in a recession are meaningless. The continual improvements in system price and performance made during the past 20 years render statistics like Federal Reserve production values—the stuff of economic models in other industries—useless for recessionary analysis.

Are PCs Recession Proof?

How a U.S. recession may affect 1991 spending plans.



Source: DATAMATION/Cowen & Co.

With the past bankrupt of information on whether to spend more or less in a recession, users are forced to examine the present for answers as they enter, if only psychologically, a recession in the United States and in Western Europe. They must look at how their peers are reacting to economic adversity. They must understand what competitive challenges are facing their own organizations. And they must explore what products and services are being delivered, not promised, by suppliers. On all three fronts, the message seems clear: now is not the time to retreat from investments in IT, although it is precisely the right moment to be choosy about IT.

Information systems managers tell DATAMATION that if any one platform will attract more of their dollars in a recession, it's the personal computer. That's odd if you still regard PCs as word processors purchased at the discretion of end users. The finding is understandable, however, in light of the new role that laptop and desktop systems are playing in the distributed-computing strategies of most organizations—as intra- and interorganizational computers, not simply as personal productivity tools.

At the other end of the technology spectrum, mainframe platforms are losing some of their luster in tough times—too pricey, no doubt, to completely escape the budget ax of chief financial officers.

In past recessions, companies coped by cutting work forces, postponing plant and office modernization plans and savaging research and development budgets. Today's business leaders recognize that those old bromides don't work in a global economy. They can't cut too much deeper into their employee ranks than previous layoffs have already reached. They know they can't get by on plants built in the 1950s or offices equipped in the 1970s. And they can't wish themselves out of tough markets—they have to develop new products and services to grow in those markets or create new ones. They realize that IT, if properly applied, can lift their workers to new heights and speed delivery of innovative goods to market.

The price of IT, and the ease with which it can be applied, only grows more attractive with every new major product introduction rolling out of Redmond, Wash.; Cupertino, Calif.; Armonk, N.Y.; Paris; Tokyo or any other headquarters of a supplier of significance. Fears of a recession haven't stopped Microsoft Corp. from hiring hundreds of programmers to develop new networking products, or Apple Computer Inc. from delivering low-priced Macintoshes, or IBM from reaching the Summit with its System/390, or Groupe Bull from developing a distributed architecture or any of the major Japanese companies from pushing notebook PCs to unbelievable levels of performance.

Their investments are driven by competition, challenges and, yes, even their own suppliers—not by economics. Your IT outlays should be guided by the same forces.

Tim Mead

Tim Mead, Editor-In-Chief